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EXAMINER

SUCHECKI, KRYSTYNA

ART UNIT PAPER NUMBER

2882

DATE MAILED: 06/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,685

Applicant(s)

LIN, WENHUA

Examiner

Krystyna Suchecki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 December 2001 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION*Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 36 of Figure 1C. Also, it is unclear what reference numerals 10 and 34 are pointing to. Portion 10 of Figure 3A is not shown in Figure 3A. Item 64B is missing from Figure 7A. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "36" and "10" have both been used to designate the device of Figure 3B; reference characters "38" and "26" have both been used to designate waveguides in Figure 3A; reference characters "38" and "26" have both been used to designate what appears to be equivalent portions of Figures 3D and 3E; reference characters "64" and "64A" and "64B" have been used to designate electrical contacts in Figures 7A-9A. In most of these figures, the characters are used to show the same part, thus labeling the part twice. Also, the characters, especially 64, are used to mark the electrical contacts even when there are differences between the contacts in the figure. For example, Figure 7A has two uses of both 64 and 64A. The effective area of each electrical contact is different, yet the largest and smallest contacts are labeled with the same character. The largest and second smallest contact are also labeled with the same character. A clear use of primacy is needed. Using 64A, 64B, 64C, 64D and 64E to represent the contacts would be more appropriate than referring to all contacts as 64 and particular contacts as 64A. Similarly, for character 26 and 38 above, using 26, 26', 26'', 26''' or

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26A, 26B, 26C, etc. to mark the waveguides would be a more clear representation that there are many similar waveguides with a change effectuated in each. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because of unclear labeling of items "10" and "24" in Figures 2A-F. "10" and "24" appear to represent opposing sides of the array grating, yet they are said in the specification to be a filter and array gratings, respectively. If Figures 2A-F represent the filter, labeling the filter with a nebulously pointing arrow is unnecessary. Simply state that the object represented in Figures 2A-F is a filter. If item 24 represents the array waveguide, a dashed enclosure encircling the area of the array waveguide, or the clear use of brackets, would be a more appropriate way of referring to a large section of the figure. Similar needs for clarity are repeated throughout the drawings in Figures 4A-7C. Arrows point to sections of the drawing that have been otherwise labeled or point sweepingly to sections that do not appear inclusive to the scope of the arrow. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to because Numeral 36 unclearly points to multiple parts of multiple figures. Figures 3A-3B and 3E include Numeral 36 pointing to a nebulous portion of the device, yet all three Figures do not contain equivalent devices. If it has been stated that a figure is a section of another figure, markation of the presence of the parent figure causes the child figure to be unclear. If Figure 3B contains the portions shown in both Figures 3A and 3C, this should be mentioned in the specification, and perhaps shown by way of appropriate dashed

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enclosure. Items included in Figures 3A-B should not be pointed to in an unclear manner, especially since the device of Figure 3A looks nothing like the view of 3C. Additionally, item 36 is shown twice in Figure 3B as pointing to unequivalent sections of the figure. Also, the cladding layer 48 is inadequately shown. If a layer is intended, a layer should be shown. Item 48 appears in the drawing to be an interface between the light transmitting material and the layer depicted above line 48. As shown, numeral 44 appears to be the cladding layer, numeral 46 appears to be the location of the ridge. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. Please ensure similar difficulties in the remaining figures are addressed, as they reappear for items 74, 76, 24, 26, 36, 76A, 64, 66, 88, 96, 38 and others.

Specification

1. The disclosure is objected to because of the following informalities:
2. Paragraphs 0055 and 0056 include references to an array waveguide configured to change the effective length of the array waveguides.
3. Paragraph 0060 refers to "a light signal fraction light".
4. Paragraph 0070 states a "component combines the light signal portions so re-form the light".
5. Paragraph 0072 has a sentence fragment beginning with "Because, the light signal".
6. In Paragraph 0074, Delta L cannot both change and remain constant at the same time for the same waveguide.

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7. Paragraph 0095 has a typographical error for the representation of the change in length. Appropriate correction is required.

Claim Objections

8. Claim 14 is objected to because of the following informalities: The statement regarding "electrical conductors to provide electrical communication between at least a portion of the effective length tuners" does not have two, or several, specific items that communication is established between. The claim must include what portion of the tuners communicates with what other object in the device. Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-21 and 23-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Maerz (U.S. 5,559,906).
11. Regarding Claim 1, Maerz shows a filter, comprising: a light distribution component having an output side (Figure 1); and a plurality of array waveguides (Figure 1) configured to deliver a light signal into the light distribution component such that the light signal is incident on the output side of the light distribution component (Figure 3), the array waveguides being configured to adjust the location (Figure 4) where the light signal is incident on the output side.

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12. Regarding Claim 2, Maerz shows the filter of claim 1, wherein at least a portion of the array waveguides includes one or more effective length tuners (Figure 4).

13. Regarding Claim 3, Maerz shows the filter of claim 2, wherein the effective length tuners are configured to change the effective lengths of array waveguides such that the amount of an effective length change between adjacent array waveguides is a constant (Column 3, line 50-Column 4, line 20).

14. Regarding Claim 4, Maerz shows the filter of claim 3, wherein the amount of the effective length change is different for each array waveguide including an effective length tuner (Column 3, lines 45-50).

15. Regarding Claim 5, Maerz shows the filter of claim 3, further comprising: electronics for operating the effective length tuners so as to change the effective length such that the amount of the effective length change between adjacent array waveguides is a constant (Column 3, lines 21-50).

16. Regarding Claim 6, Maerz shows the filter of claim 2, wherein each effective length tuner has a different effective area (Column 5, lines 13-43) and the effective area for each effective length tuner is not positioned adjacent to the light distribution component (Figure 1), the effective area being the area of the effective length tuner that causes the change in effective length.

17. Regarding Claim 7, Maerz shows the filter of claim 2, wherein each effective length tuner has an effective area and the difference in the effective area for adjacent array waveguides is a constant (Column 5, lines 13-43), the effective area being the area of the effective length tuner that causes the change in effective length.

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18. Regarding Claim 8, Maerz shows the filter of claim 7, wherein the effective area of each effective length tuner is different (Column 5, lines 13-43).

19. Regarding Claim 9, Maerz shows the filter of claim 2, wherein each effective length tuner has an effective area with a different average length and the difference in the average length for adjacent array waveguides is a constant (Column 5, lines 13-43).

20. Regarding Claim 10, Maerz shows the filter of claim 9, wherein the array waveguides each have a different average length and the difference in the average length of adjacent array waveguides is a constant, the difference in the average length of adjacent array waveguides being less than the average length of the effective area for adjacent array waveguides (Column 3 lines 12-20).

21. Regarding Claim 11, Maerz shows the filter of claim 2, wherein the length of an effective area of each effective length tuner is different for each array waveguides and the difference in the length for adjacent array waveguides is a constant (Column 5, lines 13-43).

22. Regarding Claim 12, Maerz shows the filter of claim 2, wherein the effective length tuner is not positioned adjacent to the light distribution component (Figure 1).

23. Regarding Claim 13, Maerz shows the filter of claim 2, wherein the effective length tuner of each array waveguide is positioned adjacent to a portion of the array waveguide (Figure 1).

24. Regarding Claim 14, Maerz shows the filter of claim 2, further including electrical conductors to provide electrical communication between at least a portion of the effective length tuners (Column 5, line 60- Column 6, line 16).

25. Regarding Claim 15, Maerz shows the filter of claim 2, wherein the effective length tuners are temperature control devices (Column 6, lines 36-54).

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26. Regarding Claim 16, Maerz shows the filter of claim 2, wherein each effective length tuner includes a plurality of electrical contacts (Column 5, line 60- Column 6, line 16).

27. Regarding Claim 17, Maerz shows the filter of claim 2, wherein each array waveguide is at least in part defined by a ridge and at least a portion of each effective length tuner is positioned over a ridge (Column 6, lines 29-32).

28. Regarding Claim 18, Maerz shows the filter of claim 1, wherein the light signal is one of a plurality of light signals (Figure 3).

29. Regarding Claim 19, Maerz shows the filter of claim 1, further comprising: one or more output waveguides in optical communication with the light distribution component (Figure 3).

30. Regarding Claim 20, Maerz shows a filter, comprising: a light distribution component having an output side; and a plurality of array waveguides configured to deliver a light signal into the light distribution component such that the light signal is incident on the output side of the light distribution component, at least a portion of the array waveguides including effective one or more length tuners, each effective length tuner configured to change the effective length of an array waveguide (Figure 1).

31. Regarding Claim 21, Maerz shows a filter, comprising: a light distribution component having an output side; a plurality of array waveguides configured to deliver a light signal into the light distribution component such that the light signal is incident on the output side of the light distribution component; and an effective length tuner positioned adjacent to a plurality of the array waveguides, the effective length tuner configured to change the effective length of the array waveguides such that the location where the light signal is incident on the output side of the light distribution component changes (Figure 1).

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32. Regarding Claim 23, Maerz shows the filter of claim 21, wherein the effective length tuner is configured to change the effective length of a plurality of the array waveguides such that the amount of the effective length change between adjacent array waveguides is a constant (Column 3, lines 58-60).

33. Regarding Claim 24, Maerz shows the filter of claim 21, wherein the effective length tuner has an effective area that is not positioned adjacent to the light distribution component, the effective area being an area of the effective length tuner that causes the change in effective length (Figure 1).

34. Regarding Claim 25, Maerz shows the filter of claim 21, wherein the effective length tuner has an effective area positioned adjacent to a portion of the length of at least a portion of the array waveguides, the effective area being an area of the effective length tuner that causes the change in effective length (Figure 1).

35. Regarding Claim 26, Maerz shows the filter of claim 21, wherein the effective length tuner has an effective area positioned adjacent to a portion of the array waveguides, the difference in the portion of an array waveguide that is adjacent to the effective area for adjacent array waveguides being a constant (Figure 1).

36. Regarding Claim 27, Maerz shows the filter of claim 21, wherein the effective length tuner is a temperature control device (Column 5, paragraph c).

37. Regarding Claim 28, Maerz shows the filter of claim 21, wherein the effective length tuner includes a plurality of electrical contacts (Column 6, lines 4-35).

38. Regarding Claims 29, Maerz shows a method for operating an optical filter, comprising: obtaining an optical component (obtaining a patent implies obtaining the inventive device)

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having a plurality of array waveguides in optical communication with an input side of a light distribution component, the array waveguides being configured to deliver a light signal into the light distribution component such that the light signal is incident on the output side of the light distribution component; and changing the effective lengths of at least a portion of the array waveguides such that the location where the light signal is incident on the output side of the light distribution component changes (Figure 1).

39. Regarding Claim 30, Maerz shows the method of claim 29, wherein the effective lengths of at least a portion of the array waveguides are changed so the light signal appears on one or more output waveguides in optical communication with the light distribution component (Fig 3).

40. Regarding Claim 31, Maerz shows the method of claim 29, wherein the effective lengths of at least a portion of the array waveguides are changed such that the difference in the amount of the effective length change for adjacent array waveguides is a constant (Column 3, lines 58-66).

41. Regarding Claim 32, Maerz shows the method of claim 29, wherein the effective lengths of at least a portion of the array waveguides are changed such that the difference in the amount of the effective length change is different for each of the array waveguides (Figure 4).

42. Regarding Claim 33, Maerz shows the method of claim 29, wherein changing the effective length of an array waveguide includes changing the temperature of the array waveguide (Column 5, paragraph c).

43. Regarding Claim 34, Maerz shows the method of claim 29, wherein changing the effective length of an array waveguide includes passing a current through the array waveguide (Column 6, line 24).

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44. Regarding Claim 35, Maerz shows the method of claim 29, wherein changing the effective length of an array waveguide include creating an electrical field in the array waveguide (Column 1, line 66).

45. Regarding Claim 36, Maerz shows interest in obtaining an optical component by several means, to include receiving the component from a supplier or fabricating the component, by obtaining a patent for his invention.

46. Regarding Claim 37, Maerz shows the method of claim 29, wherein the light signal is one of a plurality of light signals (Figure 3).

Claim Rejections - 35 USC § 103

47. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

48. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maerz in view of Hofmeister (U.S. 6,091,864).

49. Maerz teaches the use of effective length tuners in waveguide devices.

50. Maerz does not teach the use of wedge shaped effective length tuners.

51. Hofmeister teaches the benefits of wedge shaped effective length tuners (Figure 9) for optical devices for the purpose of inducing phase shift in the optical signal (Column 2, lines 41-65 and Column 10, lines 56-62).

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52. Since Maerz and Hofmeister are both from the same field of endeavor, the purpose disclosed by Hofmeister would have been recognized in the pertinent art of Maerz. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the wedge shaped effective length tuner of Hofmeister in the system of Maerz for causing a phase shift in the optical signal and for the purpose of compensating for distortion added to the system by the electrical structure of the system (Hofmeister, Column 3, lines 1-4).

Conclusion

53. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patents to Rediker et al., Amersfoort et al. and Rigny et al. are considered of interest.

54. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (703) 305-5424. The examiner can normally be reached on M-F 8-5.

55. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

56. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.


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May 30, 2002


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